

# Escambia Experimental Forest

## *A Living Laboratory for Long Term Loblolly Pine Research*

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**E**XPERIMENTAL FORESTS have been used for many years by research organizations as “living laboratories” where long-term research studies can be conducted. For forestry and related natural resources research, “long term” can often mean decades of continuous study before meaningful results can be obtained. The Escambia Experimental Forest was established on April 1, 1947, when the T.R. Miller Mill Company of Brewton, Alabama, provided land at no cost to the USDA-Forest Service through a 99-year lease. This 3,000-acre forest, located seven miles south of Brewton in south-

west Alabama, was selected as typical of a second-growth loblolly pine forest that, at the time, covered about 6.2 million acres in south Alabama and northwest Florida.

The forest is managed on site by a forest superintendent employed by the USDA-Forest Service. Research direction and administration of the forest is provided by the USDA-Forest Service, Southern Research Station, Silviculture Research Project, which is located on the campus of Auburn University.

### **History**

In 1874, a sawmill was built on the

Conecuh River, not far from the mouth of Lindsey Creek. This creek and some of its tributaries on the Experimental Forest were ditched for water logging to supply this mill. A dam for a storage pond can still be seen. Some “sinkers” (heavy logs that sank to the bottom of the waterway or pond) have been recovered from creeks on the forests. Railroads were built into the forest at the turn of the century, and nearly all the remaining merchantable timber was cut. Some residual stems, too small to cut, were later turpintined.

About 80 percent of the forest is in the upland loblolly pine type and the



*Bill Boyer, USDA Forest Service emeritus scientist, at entrance sign of Escambia Experimental Forest.*



*Tom Croker, Jr. addresses advisory committee meeting on the Escambia Experimental Forest in 1957 (Bill Boyer fifth from right taking notes).*

remainder in slash-hardwood bottoms. Site quality for longleaf is extremely varied, but averages about 70 feet at 50 years. When the Experimental Forest was established, the pine stands in the 4-inch and larger DBH class averaged 73 trees, 32 square feet of basal area and a volume of 690 cubic feet per acre. Average age of the second-growth longleaf pine then was 35 years and is now 88 years. Since management began, about 1,200 acres have been naturally regenerated to longleaf pine, and now contain stands ranging in age from 3 years (1996 seed crop) to 52 years (1947 seed crop).

Research on the Escambia was initially aimed at solving the principal management problems associated with longleaf pine including natural regeneration, management alternatives, growth and yield, rotation lengths, thinning regimes, forest grazing, and economic costs and returns. Today the Escambia Experimental Forest constitutes a unique example of longleaf pine ecosystems in all stages of develop-

ment. The combinations of stand ages, sites, and conditions found here exist nowhere else. Approximately 20 percent of the remaining longleaf stands in the south are within 75 miles of the forest.

The 50th anniversary of the Experimental Forest was celebrated in July 1997 at a time of rising concern about the continuing regionwide decline of longleaf pine ecosystems. Less than 3 million acres remain of the estimated 92 million acres dominated by this species in pre-settlement times. The rich cultural tradition and ecological values associated with the longleaf ecosystem, coupled with the species' adaptability to a wide range of management objectives, make



*Bill Boyer is still "preaching longleaf" after more than 40 years of research on the Escambia Experimental Forest.*





*A new generation learning about longleaf pine regeneration and management on an Experimental Forest tour in 1997.*

longleaf pine a suitable choice for many private landowners in the South, especially when utilizing low-cost natural regeneration strategies and relatively long rotations.

Among those celebrating the 50th anniversary were Tom C. Croker, Jr., who helped set up the forest in 1947 and provided leadership until his retirement in 1974, and Dr. William D. (Bill) Boyer, who has worked for over 40 years on the forest and continues to provide research and management guidance to the USDA-Forest Service as a retired emeritus scientist.

### **Research on the Forest**

The forest supports many continuing long-term research studies and management demonstrations. Research has involved all aspects of longleaf pine natural regeneration, including development of the shelterwood system for this species. Some examples of other long-term studies and demonstrations include:

1. Stand management and management alternatives including even-aged, two-aged, and all-aged management methods.
2. Growth and yield of even-aged natural stands in relation to age, site quality, and stand density. A regional longleaf growth study was initiated on the Escambia in 1964 and later spread to other locations in Alabama, Mississippi, Florida, Georgia, and North Carolina. Nearly half of the 305 plots in this study are located on the Escambia.
3. Fire ecology, including long-term effects of season and frequency of prescribed fire (or fire exclusion) on growth of dominant pine overstory, as well as effects on composition and structure of the hardwood midstory and both woody and herbaceous vegetation on the forest floor.
4. Farm Forty Demonstration—forty acres of understocked second-growth longleaf pine forest were set aside in 1947 for a demonstration of small wood-

lot management. The initial goal was to product high quality poles and logs on a 60-year rotation. The rotation has since been extended to 80 years. Over half (22 acres) of the “forty” has been harvested and naturally regenerated to longleaf pine and now supports stands ranging in size from grass-stage seedlings to small sawlogs.

To date, work on the Escambia has provided information for over 160 publications and dozens of workshops. Uncounted other reports have utilized data from the Escambia. The long-term silvicultural and fire ecology study sites provide “living laboratories” available to other researchers at universities and research foundations working to unravel some of the many fascinating mysteries lurking within what was once one of the most extensive forest ecosystems in North America. Long-term research, often difficult to retain, is once again proving to be both an ecologically and financially sound investment. ♻️